WHAT IS CLAIMED IS:

1. A method for compensating for streak defects in an image formed using an image forming device that forms the image on a receiving material that is translated through the image forming device along a process direction, comprising:

printing a compensation pattern usable to determine a difference in gray level between an actual gray level value and an intended gray level value at a cross-process-direction image-forming device pixel location in the image, comprising:

printing a plurality of gray level portions, each gray level portion having a gray level that is different from the other gray level portions and extending along the cross-process-direction, the plurality of gray level portions arranged along the process direction, and spaced from each other along the process direction such that a gap is provided between each pair of adjacent gray level portions,

printing a number of rows of fiducial marks, the rows of fiducial marks distributed among the plurality of gray level portions and comprising at least some of :

a first row of fiducial marks located before the plurality of gray level portions along the process direction,

a second row of fiducial marks located after the plurality of gray level portions along the process direction, and

at least one third row of fiducial marks, each third row of alignment marks located in a gap between a pair of adjacent gray level portions;

scanning the compensation pattern to generate a set of scanned image data, the scanned image data defining an image value for each of a plurality of scanned image cross-process -direction pixel locations for at least one of the gray level portions and for at least one row of fiducial marks;

analyzing the scanned image data for at least one of the gray level portions to determine at least one actual gray level value for at least one of the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location based on a location of at least one fiducial mark of the at least one row of fiducial marks in the scanned image data;

generating, for each analyzed cross-process-direction image-forming device pixel location, for each analyzed gray level portion of that analyzed cross-

process-direction image-forming device pixel location, at least one compensation parameter based on the determined actual gray level value for that analyzed gray level portion and the intended gray level value for that analyzed gray level portion.

2. The method of claim 1, wherein:

for each fiducial mark of the first row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location;

for each fiducial mark of the second row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location and corresponds with the fiducial mark of first row of fiducial marks that is associated with that at least one particular cross-process-direction image-forming device pixel location; and

for each third row of fiducial marks, for each fiducial mark of that third row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location and corresponds with the fiducial mark of first and second rows of fiducial marks that is associated with that at least one particular cross-process-direction image-forming device pixel location.

3. The method of claim 1, wherein analyzing the scanned image data based on the scanned image cross-process-direction pixel location of at least one fiducial mark of the at least one row of fiducial marks to determine at least one actual gray level value for at least one of the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location comprises:

selecting one of the scanned image pixel locations as a current scanned image cross-process-direction pixel location;

selecting one of the plurality of gray level portions as a current gray level portion;

selecting, based on the current gray level portion, at least one of the number of rows of fiducial marks;

determining, based on the current scanned image cross-process-direction pixel location, at least one fiducial mark in at least one of the at least one selected row of fiducial marks that is associated with the current scanned image pixel location;

determining, for each of the determined fiducial marks associated with the current scanned image cross-process-direction pixel location, a centroid of that fiducial mark;

determining, for the cross-process-direction image-forming device pixel location associated the selected scanned image pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the associated fiducial marks.

4. The method of claim 3, wherein analyzing the scanned image data further comprises repeating the gray level selecting, the at least one row of fiducial marks selecting, the at least one mark determining, the centroid determining and the actual gray level determining steps for each of the plurality of gray level portions.

5. The method of claim 4, wherein analyzing the scanned image data further comprises repeating the scanned image cross-process-direction pixel location selecting step.

6. The method of claim 3, wherein analyzing the scanned image data further comprises repeating the scanned image cross-process-direction pixel location selecting step.

7. The method of claim 3, further comprising:

determining, for that fiducial mark, an average gray level value for each scanner pixel location along the cross-process direction associated with that fiducial mark;

developing an intensity vs. cross-process position curve; and

identifying each side of that fiducial mark along the cross-process direction based on the intensity vs. cross-process position curve and a determined threshold value;

wherein determining, for each of the determined fiducial marks that are associated with the current scanned image pixel location, a centroid of that alignment mark comprises:

determining a maximum value on the intensity vs. cross-process position curve for that fiducial mark as the centroid of that fiducial mark.

8. The method of claim 7, where determining, for the cross-process-direction image-forming device pixel location associated with the selected scanned

image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the first and second associated fiducial marks comprises determining the cross-position process-direction image-forming device pixel location that is associated with the selected scanned image cross-process-direction pixel location based on the locations of the determined centroid of the at least one determined fiducial mark.

9. The method of claim 8, where determining, for the cross-process-direction image-forming device pixel location associated with the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroid of the at least one determined fiducial mark comprises:

identifying, based on the at least one determined fiducial mark, the scanned image data pixels of the selected gray level portion associated with the selected scanned image cross-process-direction pixel location; and

averaging the gray level values of the identified scanned image data pixels to generate the actual gray level value for the selected gray level portion for the selected scanned image cross-process-direction pixel location.

10. The method of claim 1, wherein generating the compensation parameter for each analyzed cross-process-direction image-forming device pixel location and for each analyzed gray level portion of that analyzed cross-process-direction image-forming device pixel location comprises generating a local tone reproduction curve value for that analyzed gray level value and for that analyzed cross-process-direction image-forming device pixel location that is usable in place of a generalized tone reproduction curve value for the image device, to convert input image data into printable image data such that the actual gray level value that is printed for that cross-process-direction image-forming device pixel location is substantially equivalent to the intended gray level value.

11. The method of claim 10, further comprising generating a local tone reproduction curve that provides a compensation parameter for each possible intended gray level value for that analyzed cross-process-direction image-forming device pixel location.

12. The method of claim 11, wherein generating a local tone reproduction curve comprises determining compensation parameters for each possible intended gray level value based on the determined compensation parameters for the plurality of actual gray level portions.

13. The method of claim 12, wherein determining compensation parameters for each possible intended gray level value comprises interpolating between the determined compensation parameters for the plurality of actual gray level portions for intended gray level values that lie between the gray level values of adjacent ones of the plurality of actual gray level portions.

14. The method of claim 1, further comprising:

printing a modified ideal compensation pattern using an ideal tone reproduction curve and a set of modifications ΔG_{ijk};

scanning the modified ideal compensation pattern;

selecting one of the plurality of gray level portions of the scanned modified ideal compensation pattern as a current gray level portion;

determining an average gray level value of the current gray level portion;

repeating the scanning, selecting and determining steps for each other gray level portion; and

generating a new ideal tone reproduction curve based on the determined average gray levels of the plurality of gray level portions.

15. The method of claim 14, wherein analyzing the scanned image data for at least one of the gray level portions to determine at least one actual gray level value for at least one of the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location based on a location of at least one fiducial mark of at least one row of fiducial marks in the scanned image data comprises:

selecting one of the scanned image cross-process-direction pixel locations as a current scanned image cross-process-direction pixel location;

selecting one of the plurality of gray level portions as a current gray level portion;

selecting, based on the current gray level portion, at least one of the number of rows of fiducial marks;

determining, based on the current scanned image cross-process-direction pixel location, at least one fiducial mark in at least one of the at least one selected row of fiducial marks that is associated with the current scanned image cross-process-direction pixel location;

determining, for each of the determined fiducial marks associated with the current scanned image cross-process-direction pixel location, a centroid of that fiducial mark;

determining, for the cross-process-direction image-forming device pixel location associated the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the associated fiducial marks.

16. The method of claim 15, wherein analyzing the scanned image data further comprises repeating the gray level selecting, the at least one row of fiducial marks selecting, the at least one mark determining, the centroid determining and the actual gray level determining steps for each of the plurality of gray level portions.

17. The method of claim 16, wherein analyzing the scanned image data further comprises repeating the scanned image cross-process-direction pixel location selecting step.

18. The method of claim 17, wherein generating the compensation parameter for each analyzed cross-process-direction image-forming device pixel location and for each analyzed gray level portion of that analyzed cross-process-direction image-forming device pixel location comprises generating a local tone reproduction curve value for that analyzed gray level value and for that analyzed cross-process-direction image-forming device pixel location that is usable in place of a generalized tone reproduction curve value for the image device, to convert input image data into printable image data such that the actual gray level value that is printed for that cross-process-direction image-forming device pixel location is substantially equivalent to the intended gray level value.

19. The method of claim 18, further comprising determining streak defect magnitudes D_{ijk} for a current iteration i, for each cross-process-direction image-forming device pixel location j and for each input gray level value k.

20. The method of claim 19, further comprising:

determining if all determined D_{ijk} are less than a determined value E; and

if not, determining a new set of modifications ΔG_{ijk}.

21. A storage medium storing a set of program instructions executable on a data processing device and usable to create data for compensating for streak defects in an image formed using an image forming device that forms the image on a receiving material that is translated through the image forming device along a process direction, the set of program instructions comprising:

instructions for printing a compensation pattern usable to determine a difference in gray level between an actual gray level value and an intended gray level value at a cross-process-direction image-forming device pixel location in the image, comprising:

instructions for printing a plurality of gray level portions, each gray level portion having a gray level that is different from the other gray level portions and extending along the cross-process-direction, the plurality of gray level portions arranged along the process direction, and spaced from each other along the process direction such that a gap is provided between each pair of adjacent gray level portions,

instructions for printing, for each gray level portion, a first edge locating mark located adjacent to a first end of that gray level portion and a second edge locating mark located adjacent to a second end of that gray level portion;

instructions for printing a first row of fiducial marks before the plurality of gray level portions along the process direction,

instructions for printing a second row of fiducial marks after the plurality of gray level portions along the process direction, and

instructions for printing a plurality of third rows of fiducial marks, one third row of alignment marks located in each gap between a pair of adjacent gray level portions;

instructions for scanning the compensation pattern to generate a set of scanned image data, the scanned image data defining an image value for each of a plurality of scanned image pixel locations;

instructions for analyzing the scanned image data for at least one of the gray level portions to determine at least one actual gray level value for at least one of

the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location based on a location of at least one fiducial mark of at least one row of the first row, the second row and the plurality of the third row of fiducial marks in the scanned image data;

instructions for generating, for each analyzed cross-process-direction image-forming device pixel location, for each analyzed gray level portion of that analyzed cross-process-direction image-forming device pixel location, at least one compensation parameter based on the determined actual gray level value for that analyzed gray level portion and the intended gray level value for that analyzed gray level portion.

22. The storage medium of claim 21, wherein:

for each fiducial mark of the first row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location;

for each fiducial mark of the second row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location and corresponds with the fiducial mark of first row of fiducial marks that is associated with that at least one particular cross-process-direction image-forming device pixel location; and

for each third row of fiducial marks, for each fiducial mark of that third row of fiducial marks, that fiducial mark is associated with at least one particular cross-process-direction image-forming device pixel location and corresponds with the fiducial mark of first and second rows of fiducial marks that is associated with that at least one particular cross-process-direction image-forming device pixel location.

23. The storage medium of claim 21, wherein the instructions for analyzing the scanned image data for at least one of the gray level portions to determine at least one actual gray level value for at least one of the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location based on a location of at least one fiducial mark of at least one of the number of rows of fiducial marks in the scanned image data comprise:

instructions for selecting one of the scanned image cross-process-direction pixel locations as a current scanned image pixel location;

instructions for selecting one of the plurality of gray level portions as a current gray level portion;

instructions for selecting, based on the current gray level portion, at least one of the number of rows of fiducial marks;

instructions for determining, based on the current scanned image cross-process-direction pixel location, at least one fiducial mark in at least one of the at least one selected row of fiducial marks that is associated with the current scanned image cross-process-direction pixel location;

instructions for determining, for each of the determined fiducial marks associated with the current scanned image cross-process-direction pixel location, a centroid of that fiducial mark;

instructions for determining, for the cross-process-direction image-forming device pixel location associated the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the associated fiducial marks.

24. The storage medium of claim 23, wherein the instructions for analyzing the scanned image data further comprise instructions for repeating the gray level selecting instructions, the at least one row of fiducial marks selecting instructions, the at least one mark determining instructions, the centroid determining instructions and the actual gray level determining instructions for each of the plurality of gray level portions.

25. The storage medium of claim 24, wherein the instructions for analyzing the scanned image data further comprise instructions for repeating the scanned image pixel location selecting instructions.

26. The storage medium of claim 23, wherein the instructions for analyzing the scanned image data further comprise instructions for repeating the scanned image pixel location selecting instructions.

27. The storage medium of claim 23, further comprising:

instructions for determining, for that fiducial mark, an average gray level value for each scanner pixel location along the cross-process direction;

instructions for developing an intensity vs. cross-process position curve; and

instructions for identifying each side of that fiducial mark along the cross-process direction based on the intensity vs. cross-process position curve and a determined threshold value;

wherein the instructions for determining, for each of the determined fiducial marks that are associated with the current scanned image pixel location, a centroid of that alignment mark comprise:

instructions for determining a maximum value on the intensity vs. cross-process position curve for that fiducial mark as the centroid of that fiducial mark.

28. The storage medium of claim 27, wherein the instructions for determining, for the cross-process-direction image-forming device pixel location associated with the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the first and second associated alignment marks comprise instructions for determining the cross-position process-direction image-forming device pixel location that is associated with the selected scanned image cross-process-direction pixel location based on the locations of the determined centroid of the at least one determined fiducial mark.

29. The storage medium of claim 28, wherein the instructions for determining, for the cross-process-direction image-forming device pixel location associated with the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroid of the at least one determined fiducial mark comprise:

instructions for identifying, based on the at least one determined fiducial mark, the scanned image data pixels of the selected gray level portion; and

instructions for averaging the gray level values of the identified scanned image data pixels to generate the actual gray level value for the selected gray level portion.

30. The storage medium of claim 21, wherein the instructions for generating the compensation parameter for each analyzed cross-process-direction image-forming device pixel location and for each analyzed gray level portion of that

analyzed cross-process-direction image-forming device pixel location comprise instructions for generating a local tone reproduction curve value for that analyzed gray level value and for that analyzed cross-process-direction image-forming device pixel location that is usable in place of a generalized tone reproduction curve value for the image device, to convert input image data into printable image data such that the actual gray level value that is printed for that cross-process-direction image-forming device pixel location is substantially equivalent to the intended gray level value.

31. The storage medium of claim 30, further comprising instructions for generating a local tone reproduction curve that provides a compensation parameter for each possible intended gray level value for that analyzed cross-process-direction image-forming device pixel location.

32. The storage medium of claim 31, wherein the instructions for generating a local tone reproduction curve comprise instructions for determining compensation parameters for each possible intended gray level value based on the determined compensation parameters for the plurality of actual gray level portions.

33. The storage medium of claim 32, wherein the instructions for determining compensation parameters for each possible intended gray level value comprise instructions for interpolating between the determined compensation parameters for the plurality of actual gray level portions for intended gray level values that lie between the gray level values of adjacent ones of the plurality of actual gray level portions.

34. The storage medium of claim 21, further comprising:

instructions for printing a modified ideal compensation pattern using an ideal tone reproduction curve and a set of modifications ΔG_{ijk};

instructions for scanning the modified ideal compensation pattern;

instructions for selecting one of the plurality of gray level portions of the scanned modified ideal compensation pattern as a current gray level portion;

instructions for determining an average gray level value of the current gray level portion;

instructions for repeating the scanning, selecting and determining instructions for each other gray level portion; and

instructions for generating a new ideal tone reproduction curve based on the determined average gray levels of the plurality of gray level portions.

35. The storage medium of claim 34, wherein the instructions for analyzing the scanned image data for at least one of the gray level portions to determine at least one actual gray level value for at least one of the plurality of gray level portions for at least one cross-process-direction image-forming device pixel location based on a location of at least one fiducial mark of at least one selected row of fiducial marks in the scanned image data comprise:

instructions for selecting one of the scanned image pixel cross-process-direction locations as a current scanned image cross-process-direction pixel location;

instructions for selecting one of the plurality of gray level portions as a current gray level portion;

instructions for determining, based on the current gray level portion, at least one of the number of rows of fiducial marks;

instructions for determining, based on the current scanned image cross-process-direction pixel location, at least one fiducial mark in at least one of the at least one selected row of fiducial marks that is associated with the current scanned image cross-process-direction pixel location;

instructions for determining, for each of the determined fiducial marks associated with the current scanned image cross-process-direction pixel location, a centroid of that fiducial mark;

instructions for determining, for the cross-process-direction image-forming device pixel location associated the selected scanned image cross-process-direction pixel location, the actual gray level value for the selected gray level portion of the associated cross-process-direction image-forming device pixel location based on the determined centroids of the associated fiducial marks.

36. The storage medium of claim 35, wherein the instructions for analyzing the scanned image data further comprise instructions for repeating the gray level selecting, the at least one selected row of fiducial marks selecting, the at least one mark determining, the centroid determining and the actual gray level determining instructions for each of the plurality of gray level portions.

37. The storage medium of claim 36, wherein the instructions for analyzing the scanned image data further comprise instructions for repeating the scanned image pixel location selecting instructions.

38. The storage medium of claim 37, wherein the instructions for generating the compensation parameter for each analyzed cross-process-direction image-forming device pixel location and for each analyzed gray level portion of that analyzed cross-process-direction image-forming device pixel location comprise instructions for generating a local tone reproduction curve value for that analyzed gray level value and for that analyzed cross-process-direction image-forming device pixel location that is usable in place of a generalized tone reproduction curve value for the image device, to convert input image data into printable image data such that the actual gray level value that is printed for that cross-process-direction image-forming device pixel location is substantially equivalent to the intended gray level value.

39. The storage medium of claim 38, further comprising instructions for determining streak defect magnitudes ΔD_{ijk} for a current iteration i, for each cross-process-direction image-forming device pixel location j and for each input gray level value k.

40. The storage medium of claim 39, further comprising:

instructions for determining if all determined ΔD_{ijk} are less than a determined value E; and

instructions for determining a new set of modifications ΔG_{ijk}, if not all determined ΔD_{ijk} are less than a determined value E.

41. A compensation pattern usable to determine a difference in gray level between an actual gray level value and an intended gray level value at a cross-process-direction image-forming device pixel location in the image, comprising:

a plurality of gray level portions, each gray level portion having a gray level that is different from the other gray level portions and extending along the cross-process-direction, the plurality of gray level portions arranged along the process direction, and spaced from each other along the process direction such that a gap is provided between each pair of adjacent gray level portions; and

a number of rows of fiducial marks, the rows of fiducial marks distributed among the plurality of gray level portions and comprising at least some of:

a first row of fiducial marks located before the plurality of gray level portions along the process direction,

a second row of fiducial marks located after the plurality of gray level portions along the process direction, and

at least one third row of fiducial marks, each third row of alignment marks located in a gap between a pair of adjacent gray level portions.